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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Attorney Docket No.: 2267.962US01

Charles W. Extrand

Confirmation No.: 5391

Application No.: 10/824,340

Filed: April 14, 2004

Group Art Unit: 1724

For: ULTRALYOPHOBIC MEMBRANE

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INFORMATION DISCLOSURE STATEMENT

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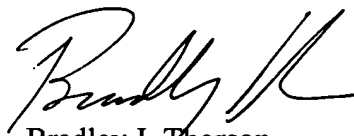
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Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached Form PTO-1449. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This information is being filed before the mailing date of a first Office Action on the merits. No certification or fee is required.

This application was filed after June 30, 2003; therefore, copies of cited U.S. patents and U.S. published applications are not included.

Respectfully submitted,



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Application No. 10/824,340

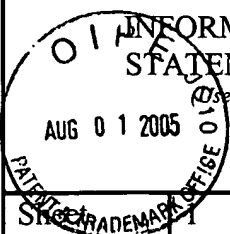
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|   |                        |              | Application Number       | 10/824,340         |
|   |                        |              | Filing Date              | April 14, 2004     |
|   |                        |              | First Named Inventor     | Charles W. Extrand |
|   |                        |              | Art Unit                 | 1724               |
|   |                        |              | Examiner Name            |                    |
| Sheet 1 of 7  | Attorney Docket Number | 2267.962US01 |                          |                    |

### U.S. PATENT DOCUMENTS

| EXAMINER<br>INITIAL* | Cite<br>No. <sup>1</sup> | Document Number                          | Publication Date<br>MM-DD-YYYY | Name of Patentee or Applicant<br>of Cited Document |
|----------------------|--------------------------|--|--------------------------------|--|
|                      |                          | Number-Kind Code <sup>2</sup> (if known) |                                |  |
|                      |                          | US-6,783,882 B2                          | 08/31/2004                     | Jeffrey A. Schmidt                                 |
|                      |                          | US-6,660,363 B1                          | 12/09/2003                     | Wilhelm Barthlott                                  |
|                      |                          | US-6,623,882 B2                          | 09/23/2003                     | Jefferson Yang                                     |
|                      |                          | US-6,605,379 B1                          | 08/12/2003                     | Robert Angelo Mercuri et al.                       |
|                      |                          | US-6,541,389 B1                          | 04/01/2003                     | Akira Kubo et al.                                  |
|                      |                          | US-6,530,554 B2                          | 03/11/2003                     | Katsuhide Shimmo et al.                            |
|                      |                          | US-6,518,168 B1                          | 02/11/2003                     | Paul G. Clem et al.                                |
|                      |                          | US-6,455,021 B1                          | 09/24/2002                     | Yahachi Saito                                      |
|                      |                          | US-6,444,254 B1                          | 09/03/2002                     | Ashutosh Chilkoti et al.                           |
|                      |                          | US-6,432,866 B1                          | 08/13/2002                     | Howard Tennent et al.                              |
|                      |                          | US-6,423,372 B1                          | 07/23/2002                     | Jan Genzer et al.                                  |
|                      |                          | US-6,403,388 B1                          | 07/11/2002                     | Jeffrey D. Birdsley et al.                         |
|                      |                          | US-6,312,303 B1                          | 11/06/2001                     | Zvi Yaniv et al.                                   |
|                      |                          | US-6,299,981 B1                          | 10/09/2001                     | Marie-Jose Azzopardi et al.                        |
|                      |                          | US-5,900,160                             | 05/04/1999                     | George M. Whitesides et al.                        |
|                      |                          | US-5,725,788                             | 03/10/1998                     | George N. Maracas et al.                           |
|                      |                          | US-5,679,460                             | 10/21/1997                     | Josephus M. Schakenraad et al.                     |
|                      |                          | US-5,674,592                             | 10/07/1997                     | John C. Clark et al.                               |
|                      |                          | US-5,609,907                             | 03/11/1997                     | Michael Natan                                      |
|                      |                          | US-5,252,835                             | 10/12/1993                     | Charles M. Leiber et al.                           |
|                      |                          | US-5,094,749                             | 03/10/1992                     | Seita et al.                                       |
|                      |                          | US-4,909,989                             | 03/20/1990                     | Fukazawa et al.                                    |
|                      |                          | US-3,753,712                             | 08/21/1973                     | Janneck et al.                                     |
|                      |                          | US-3,724,673                             | 04/03/1973                     | Ryon   |
|                      |                          | US-2002/0047822 A1                       | 03/13/2003                     | Masahiro Hori et al.                               |
|                      |                          | US-2002/0150684 A1                       | 10/17/2002                     | Ahalapitiya H. Jayatissa                           |
|                      |                          | US-2002/0136683 A1                       | 09/26/2002                     | Richard E. Smalley et al.                          |
|                      |                          | US-2002/0122765 A1                       | 09/05/2002                     | Kazunaga Horiuchi et al.                           |
|                      |                          | US-2002/0114949 A1                       | 08/22/2002                     | Christopher A. Bower et al.                        |
|                      |                          | US-2002/0034879 A1                       | 03/21/2002                     | Wenbing Yun et al.                                 |
|                      |                          | US-2002/0025374 A1                       | 02/28/2002                     | Yun Hi Lee et al.                                  |

|                       |                    |
|-----------------------|--------------------|
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|-----------------------|--------------------|

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| Sheet | 2 | of | 7 | Attorney Docket Number | 2267.962US01 |
|-------|---|----|---|------------------------|--------------|

### FOREIGN PATENT DOCUMENTS

| EXAMINER<br>INITIAL* | Cite<br>No. <sup>1</sup> | Foreign Patent Document  | Publication Date<br>MM-DD-YYYY | Name of Patentee or Applicant<br>of Cited Document | T <sup>6</sup> |
|----------------------|--------------------------|--|--------------------------------|--|----------------|
|                      |                          | Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup><br>(if known) |                                |  |                |
|                      |                          | WO 02/084340 A1  | 10/24/2002                     | Ming-Hsien Wu et al.                               |                |
|                      |                          | WO 01/92179 A1   | 12/06/2001                     | Karsten Reihs et al.                               |                |
|                      |                          | WO 01/94034 A1   | 12/13/2001                     | Dieter Scharnweber et al.                          |                |
|                      |                          | WO 00/39368  | 07/06/2000                     | Karsten Reihs et al.                               |                |
|                      |                          | WO 00/38845  | 07/06/2000                     | Karsten Reihs et al.                               |                |
|                      |                          | WO 01/79142 A1   | 10/25/2001                     | Peter Furniss et al.                               |                |
|                      |                          | CA 2356178 A1  | 07/06/2000                     | Karsten Reihs et al.                               |                |

### NON PATENT LITERATURE DOCUMENTS

| EXAMINER<br>INITIAL* | Cite<br>No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published | T <sup>2</sup> |
|----------------------|--------------------------|--|----------------|
|                      |                          | DIDEM ÖNER et al., <u>Ultrahydrophobic Surfaces. Effects of Topography Length Scales on Wettability</u> , <i>Langmuir</i> 2000, June 23, 2000, vol. 16, no. 20, pp. 7777-7782  |                |
|                      |                          | ROBERT H. DETTRE et al., <u>Contact Angle Hysteresis II. Contact Angle Measurements on Rough Surfaces</u> , <i>Advances in Chemistry Series</i> , March 22, 1963, pp. 136-144  |                |
|                      |                          | A.B.D. CASSIE et al., <u>Wettability of Porous Surfaces</u> , June 19, 1944, pp. 546-551   |                |
|                      |                          | C. RASCÓN et al., <u>Geometry-dominated fluid adsorption on sculpted solid substrates</u> , <i>Nature</i> , October 26, 2000, vol. 407, pp. 986-989  |                |
|                      |                          | R.G. COX, <u>The spreading of a liquid on a rough surface</u> , <i>J. Fluid Mech.</i> , 1983, vol. 131, pp. 1-26   |                |
|                      |                          | G. MCHALE et al., <u>Analysis of Shape Distortions in Sessile Drops</u> , <i>Langmuir</i> , 2001, vol. 17, pp. 6995-6998   |                |
|                      |                          | A. ESZTERMANN et al., <u>Triple-Point Wetting on Rough Substrates</u> , <i>The American Physical Society</i> , February 4, 2002, vol. 88, no. 5, pp. 55702/1-55702/4   |                |
|                      |                          | S.G. MASON, <u>Wetting and Spreading – Some Effects of Surface Roughness</u> , <i>Academic Press</i> , 1978, pp. 321-326   |                |
|                      |                          | H. KAMUSEWITZ et al., <u>The relation between Young's equilibrium contact angle and the hysteresis on rough paraffin was surfaces</u> , <i>Elsevier Science B.V.</i> , 1999, pp. 271-279   |                |
|                      |                          | J.F. OLIVER et al., <u>Liquid spreading on rough metal surfaces</u> , <i>Journal of Materials Science</i> , 1980, vol. 15, pp. 431-437   |                |
|                      |                          | JAMES E. SMAY et al., <u>Colloidal Inks for Directed Assembly of 3-D Periodic Structures</u> , <i>Langmuir</i> , 2002, vol. 18, pp. 5429-5437  |                |

EXAMINER  
SIGNATURE

DATE  
CONSIDERED

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|----------------------|--------------------------|---|----------------|
|                      |                          | DARRON E. HILL et al., <u>Functionalization of Carbon Nanotubes with Polystyrene</u> , <i>Macromolecules</i> , 2002, vol. 35, pp. 9466-9471   |                |
|                      |                          | ROBERT J. GOOD, <u>A Thermodynamic Derivation of Wenzel's Modification of Young's Equation for Contact Angles; Together with a Theory of Hysteresis</u> , <i>Journal of American Chemical Society</i> , October 20, 1952, vol. 74, pp. 5041-5042                  |                |
|                      |                          | ERDAL BAYRAMLI et al., <u>Tensiometric studies on wetting. I. Some effects of surface roughness (theoretical)</u> , <i>Canadian Journal of Chemistry</i> , 1981, vol. 59, pp. 1954-1961   |                |
|                      |                          | S. SEMAL et al., <u>Influence of Surface Roughness on Wetting Dynamics</u> , <i>Langmuir</i> , 1999, vol. 15, pp. 8765-8770   |                |
|                      |                          | J.F. OLIVER et al., <u>The Apparent Contact Angle of Liquids on Finely-Grooved Solid Surfaces-A SEM Study</u> , <i>Gordon and Breach Science Publishers Ltd.</i> , 1977, vol. 8, pp. 223-234  |                |
|                      |                          | A.J.G. ALLAN et al., <u>Wettability of Perfluorocarbon Polymer Films: Effect of Roughness</u> , <i>Journal of Polymer Science</i> , 1959, vol. XXXIX, pp. 1-8   |                |
|                      |                          | J.B. SWEENEY et al., <u>Equilibrium Thin Films on Rough Surfaces. 1. Capillary and Disjoining Effects</u> , <i>Langmuir</i> , 1993, vol. 9, pp. 1551-1555   |                |
|                      |                          | WEI CHEN et al., <u>Ultrahydrophobic and Ultralyophobic Surfaces: Some Comments and Examples</u> , <i>Langmuir</i> , 1999, vol. 15, pp. 3395-3399   |                |
|                      |                          | JEFFREY P. YOUNGBLOOD et al., <u>Ultrahydrophobic Polymer Surfaces Prepared by Simultaneous Ablation of Polypropylene and Sputtering of Poly(tetrafluoroethylene) Using Radio Frequency Plasma</u> , <i>Macromolecules</i> , 1999, vol. 32, pp. 6800-6806         |                |
|                      |                          | JOANNA AIZENBERG et al., <u>Direct Fabrication of Large Micropatterned Single Crystals</u> , <i>SCIENCE</i> , vol. 299, February 21, 2003, pp. 1205-1208  |                |
|                      |                          | J.D. EICK et al., <u>Thermodynamics of Contact Angles</u> , <i>Journal of Colloid and Interface Science</i> , November 1975, vol. 53, no. 2, pp. 235-248  |                |
|                      |                          | F.Y.H. LIN et al., <u>Effect of Surface Roughness on the Dependence of Contact Angles on Drop Size</u> , <i>Journal of Colloid and Interface Science</i> , 1993, vol. 159, pp. 86-59  |                |
|                      |                          | PETER S. SWAIN et al., <u>Contact Angles on Heterogeneous Surfaces: A New Look at Cassie's and Wenzel's Laws</u> , <i>Langmuir</i> , 1998, vol. 14, pp. 6772-6780   |                |
|                      |                          | KIYOHARU TADANAGA et al., <u>Formation Process of Super-Water-Repellent Al<sub>2</sub>O<sub>3</sub> Coating Films with High Transparency by the Sol-Gel Method</u> , <i>Communications of the American Ceramic Society</i> , 1997, vol. 80, no. 12, pp. 3213-3216 |                |

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|-----------------------|--------------------|
| EXAMINER<br>SIGNATURE | DATE<br>CONSIDERED |
|-----------------------|--------------------|

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| Sheet | 4 | of | 7 | Attorney Docket Number | 2267.962US01 |
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|----------------------|--------------------------|--|----------------|
|                      |                          | KIYOHARU TADANAGA et al., <u>Super-Water-Repellent Al<sub>2</sub>O<sub>3</sub> Coating Films with High Transparency</u> , <i>Communications of the American Ceramic Society</i> , 1997, vol. 80, no. 4, pp. 1040-1042  |                |
|                      |                          | SHUHONG LI et al., <u>Super-Hydrophobicity of Large-Area Honeycomb-Like Aligned Carbon Nanotubes</u> , <i>Journal of Physical Chemistry</i> , 2002, vol. 106, no. 36, pp. 9274-9276  |                |
|                      |                          | J. KIJLSTRA et al., <u>Roughness and topology of ultra-hydrophobic surfaces</u> , <i>Elsevier Science B.V.</i> , 2002, vol. 206, pp. 521-529   |                |
|                      |                          | MASAHIDE TANIGUCHI et al., <u>Effect of Undulations on Surface Energy: A Quantitative Assessment</u> , <i>Langmuir</i> , 2001, vol.17, pp. 4312-4315   |                |
|                      |                          | DAVID QUÉRÉ, <u>Surface Chemistry Fakir droplets</u> , <i>News &amp; Views</i> , 2002, pp. 14-15   |                |
|                      |                          | MASAHIDE TANIGUCHI et al., <u>Correcting for Surface Roughness: Advancing and Receding Contact Angles</u> , <i>Langmuir</i> , 2002, vol. 18, pp. 6465-6467   |                |
|                      |                          | M. THIEME et al., <u>Generation of Ultrahydrophobic Properties of Aluminum – A First Step to Self-cleaning Transparently Coated Metal Surfaces</u> , <i>Advanced Engin. Mater.</i> , Internet, 2001, vol. 9, pp. 1   |                |
|                      |                          | ZEN YOSHIMITSU et al., <u>Effects of Surface Structure on the Hydrophobicity and Sliding Behavior of Water Droplets</u> , <i>Langmuir</i> , 2002, vol. 18, 5818-5822   |                |
|                      |                          | DAVID S. SOANE et al., <i>Fluorsight</i> , Brennan Research Group, January 2003, p. 15   |                |
|                      |                          | J.J. BIKERMAN, <u>Sliding of Drops From Surfaces of Different Roughness</u> , pp. 349-359  |                |
|                      |                          | A.B.D. CASSIE, <u>Contact Angles</u> , <i>Wool Industries Research Association</i> , January 27, 1948, pp. 11-16   |                |
|                      |                          | EUN HEE CIRLIN et al., <u>Roughness and Anisotropy Effects on wettability of Polytetrafluorethylene and Sodium-treated Polytetrafluoroethylene</u> , <i>Journal of Polymer Science</i> , 1973, vol. 11, pp. 785-799  |                |
|                      |                          | PULP AND PAPER RESEARCH INSTITUTE OF CANADA, <u>Liquid Spreading: Edge Effect for Zero Contact Angle</u> , <i>Journal of Colloid and Interface Science</i> , August 1978, vol. 66, no. 1, pp. 200-202  |                |
|                      |                          | ROBERT N. WENZEL, <u>Resistance of Solid Surfaces to Wetting by Water</u> , <i>Industrial and Engineering Chemistry</i> , August 1936, vol. 28, no.8, pp. 988-994  |                |

|                       |                    |
|-----------------------|--------------------|
| EXAMINER<br>SIGNATURE | DATE<br>CONSIDERED |
|-----------------------|--------------------|

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|----------------------|--------------------------|--|----------------|
|                      |                          | WILL H. COGHILL et al., <u>Why Water Over-Fills a Tumbler</u> , <i>Scientific American Supplement</i> , July 27, 1918, vol. 86, no. 2221, pp. 52-53  |                |
|                      |                          | R.D. SCHULZE et al., <u>Young's equilibrium contact angle on rough solid surfaces. Part I. An empirical determination</u> , <i>J. Adhesion Sci. Technol.</i> , 1989, vol. 3, no. 1, pp. 39-48  |                |
|                      |                          | J.F. OLIVER et al., <u>An Experimental Study of Some Effects of Solid Surface Roughness on Wetting</u> , <i>Colloids and Surfaces</i> , 1980, vol. 1, pp. 79-104   |                |
|                      |                          | KIYOHARU TADANAGA et al., <u>Superhydrophobic-Superhydrophilic Micropatterning on Flowerlike Alumina Coating Film by the Sol-Gel Method</u> , <i>American Chemical Society</i> , 2000, vol. 12, pp. 590-592  |                |
|                      |                          | S. HERMINGHAUS, <u>Roughness-induces non-wetting</u> , <i>Europhysics Letters</i> , October 15, 2000, vol. 52, pp. 165-170   |                |
|                      |                          | J. BICO et al., <u>Rough wetting</u> , <i>Europhysics Letters</i> , July 15, 2001 vol. 55, pp. 214-220   |                |
|                      |                          | RANDY DOYLE HAZLETT, <u>Fractal Applications: Wettability and Contact Angle</u> , <i>Journal of Colloid and Interface Science</i> , July 1990, vol. 137, no. 2, 527-533  |                |
|                      |                          | Y. TAMAI et al., <u>Experimental Study of the Relation between Contact Angle and Surface Roughness</u> , <i>The Journal of Physical Chemistry</i> , 1972, vol. 76, no. 22, pp. 3267-3271   |                |
|                      |                          | J. KIJLSTRA et al., <u>Roughness and topology of ultra-hydrophobic surfaces</u> , <i>Colloids and Surfaces</i> , 2002, vol. 206, pp. 521-529   |                |
|                      |                          | SATOSHI SHIBUICHI et al., <u>Super Water-Repellent Surfaces Resulting from Fractal Structure</u> , <i>J. Phys. Chem.</i> , 1996, vol. 100, pp. 19512-19517   |                |
|                      |                          | J. BICO et al., <u>Pearl drops</u> , <i>Europhysics Letters</i> , July 15, 1999, vol. 47, no. 2, pp. 220-226   |                |
|                      |                          | H. YILDIRIM ERBIL et al., <u>Transformation of a Simple Plastic into a Superhydrophobic Surface</u> , <i>Science</i> , February 28, 2002, vol. 299, pp. 1377-1380  |                |
|                      |                          | J.D. MILLER et al., <u>Effect of Roughness as Determined by Atomic Force Microscopy on the Wetting Properties of PTFE Thin Films*</u> , <i>Polymer Engineering and Science</i> , July 1996, vol. 36, no. 14, pp. 1849-1855                                     |                |
|                      |                          | ATSUSHI HOZUMI et al., <u>Preparation of ultra water-repellent films by microwave plasma-enhanced CVD</u> , <i>Thin Solid Films</i> , 1997, pp. 222-225  |                |

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|----------------------------------|--------------------------|--|----------------|
|                                  |                          | BRIAN D. REISS et al., <u>DNA-Directed Assembly of Anisotropic Nanoparticles on Lithographically Defined Surfaces and in Solution</u> , <i>Materials Research Society</i> , 2001, vol. 635, pp.C6.2.1-C6.2.6   |                |
|                                  |                          | F.E. BARTELL et al., <u>Surface Roughness as Related to Hysteresis of Contact Angles.</u> <sup>1</sup> I. The System Paraffin-Water-Air, <i>J. Phys. Chem.</i> , February 1953, vol. 57, pp. 211-215   |                |
|                                  |                          | F.E. BARTELL et al., <u>Surface Roughness as Related to Hysteresis of Contact Angles.</u> II. The Systems Paraffin-3 Molar Calcium Chloride Solution-Air and Paraffin-Glycerol-Air <sup>1</sup> . <i>J. Phys. Chem.</i> , April 1953, vol. 57, pp. 455-463     |                |
|                                  |                          | D. RICHARD et al., <u>Bouncing water drops</u> , <i>Europhysics letters</i> , June 15, 2000, vol. 50, pp. 769-775  |                |
|                                  |                          | JUN YANG et al., <u>Microfluid Flow in Circular Microchannel with Electrokinetic Effect and Navier's Slip Condition</u> , <i>Langmuir</i> , 2003, vol. 19, no. 4, pp. 1047-1053  |                |
|                                  |                          | NEELESH A. PATANKAR, <u>On the Modeling of Hydrophobic Contact Angles on Rough Surfaces</u> , <i>Langmuir</i> , 2003, vol. 19, no. 4, pp. 1249-1253  |                |
|                                  |                          | SUGURU OKUYAMA et al., <u>Periodic Submicrocylinder Diamond Surfaces Using Two-Dimensional Fine Particle Arrays</u> , <i>Langmuir</i> , 2002, vol. 18, no. 22, pp. 8282-8287   |                |
|                                  |                          | YOSHIHITO KUNUGI et al., <u>Electro-organic reactions on organic electrodes.</u> , <i>J. Electroanal. Chem.</i> , 1993, vol. 353, pp. 209-215  |                |
|                                  |                          | C. HUH <sup>1</sup> et al., <u>Effects of Surface Roughness on Wetting (Theoretical)</u> , <i>Journal of Colloid and Interface Science</i> , June 1, 1977, vol. 60, no. 1, pp. 11-38   |                |
|                                  |                          | LETTER TO THE EDITORS, <u>Contact Angles by Scanning Electron Microscopy. Silicone Oil on Polished Aluminum</u> , <i>Journal of Colloid and Interface Science</i> , February 1971, vol. 35, no. 2, pp. 362-364   |                |
|                                  |                          | NORMAN R. MORROW, <u>The Effects of Surface Roughness on Contact Angle with Special Reference to Petroleum Recovery</u> , <i>The Journal of Canadian Petroleum</i> , October-December 1975, pp. 42-54  |                |
|                                  |                          | PASCALE AUSSILLOUS et al., <u>Liquid Marbles</u> , <i>Nature</i> , June 21, 2001, vol. 411, pp. 924-896  |                |
|                                  |                          | WEI JIN et al., <u>Wetting Hysteresis at the Molecular Scale</u> , <i>Physical Review Letters</i> , February 24, 1997, vol. 78, no. 8, pp. 1520-1523   |                |
|                                  |                          | H.J. BUSSCHER et al., <u>The Effect of Surface Roughening of Polymers on Measured Contact Angles of Liquids</u> , <i>Colloids and Surfaces</i> , 1984, pp.319-331  |                |

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|   |                          | R. SHUTTLEWORTH et al., <u>The Spreading of a Liquid Over a Rough Solid</u> , February 23, 1948, pp. 16-22   |   |                        |                |
|   |                          | J.F. OLIVER et al., <u>Resistance to Spreading of Liquids by Sharp Edges</u> <sup>1</sup> , <i>Journal of Colloid and Interface Science</i> , May 1977, vol. 59, no. 3, pp. 568-579  |   |                        |                |
|   |                          | T. ONDA et al., <u>Super-Water-Repellent Fractal Surfaces</u> , <i>The ACS Journal of Surfaces and Colloids</i> , May 1, 1996, vol. 12, no. 9, pp. 2125-2127   |   |                        |                |
|   |                          | PHILLIP G. WAPNER et al., <u>Partial Wetting Phenomena on Nonplanar Surfaces and in Shaped Microchannels</u> , <i>Langmuir</i> , 2002, vol. 18, no. 4, pp. 1225-1230   |   |                        |                |
|   |                          | JOONWON KIM et al., <u>Nanostructured Surfaces for Dramatic Reduction of Flow Resistance in Droplet-Based Microfluidics</u> , 2002, pp. 479-482  |   |                        |                |
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